

What is claimed is:

- 5 1. A coating material having a viscosity of less than 1000 mPas within a temperature range of 0 to 90°C and comprising:
- a. 40 to 90 wt.% of at least one oligomeric substance selected from the group consisting of epoxy (meth)acrylates, polyester (meth)acrylates, polyether (meth)acrylates, and polyurethane (meth)acrylates, wherein said oligomeric substance is linear or branched and contains at least two unsaturated double bonds;
 - 10 b. 5 to 60 wt.% of at least one low molecular weight (meth)acrylate selected from the group consisting of monofunctional, difunctional, trifunctional and polyfunctional (meth)acrylate compounds;
 - 15 c. 0.1 to 20 wt.% of at least one (meth)acrylate compound containing one or more acidic groups; and
 - d. 0.1 to 20 wt.% of at least one auxiliary substance selected from the group consisting of adhesion promoters, flow-control agents, defoaming agents, light stabilizers, dyes, pigments, biocides, fillers and photoinitiators.
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- 25 2. A coating material according to claim 1 having a viscosity within a temperature range of 15°C to 70°C of less than 300 mPas.
3. A coating material according to claim 1 additionally comprising up to 20 wt.% of at least one silane selected from the group consisting of dialkoxysilanes and trialkoxysilanes wherein said at least one silane contains at least one functional group other than alkoxy groups.
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- 35 4. A coating material according to claim 1, wherein component c) comprises at least one methacrylate compound selected from the group consisting of phosphoric (meth)acrylate

compounds and phosphonic (meth)acrylate compounds.

5. A coating material according to claim 1 comprising at least one dye or pigment.

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6. A coating material according to claim 1 comprising at least one biocide.

- 10 7. A coating material according to claim 1 comprising at least one pigment selected from the group consisting of highly disperse silica and highly disperse aluminium oxide.

- 15 8. A process for coating a metal surface, said process comprising applying a layer of the coating material according to claim 1 to said metal surface and cross-linking said layer by means of high-energy radiation.

- 20 9. A process according to claim 8 wherein said metal surface is comprised of a material selected from the group consisting of ferrous materials, steel, alloyed steel, light metals, non-ferrous metals and precious metals.

- 25 10. A process according to claim 8 wherein the high-energy radiation used is UV radiation.

11. A process according to claim 8 wherein said layer of coating material is from 0.5 to 20 μm in thickness.

- 30 12. A process according to claim 8 wherein said layer of coating material is from 1 to 10 μm in thickness.

13. A process according to claim 8 wherein said layer of coating material is up to 5 μm in thickness.

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14. A process according to claim 8 wherein the high-energy

radiation used has a wavelength of 200 to 450 nm.

15. A process according to claim 8 wherein the metal surface
is cleaned and degreased prior to applying said layer of
5 coating material.
16. A process according to claim 8 wherein the coating
material is applied by a method selected from the group
consisting of flooding, squeezing off, roller application,
10 squeegee, airless spraying, air-assisted spraying and
electrostatic spraying.
17. A process according to claim 8 wherein said metal surface
is in the form of a strip and is coated by roller
15 application.
18. A process according to claim 8 wherein during the cross-
linking step the metal surface having the layer applied
thereon is in a low-oxygen or oxygen-free atmosphere.
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19. A process according to claim 8 wherein after applying
said layer of coating material and before cross-linking said
layer a film is applied to said layer.
- 25 20. A process according to claim 19 wherein the film is
comprised of at least one polymer selected from the group
consisting of polyethylene, polypropylene, and PET and is
separable from the layer after cross-linking.
- 30 21. A process according to claim 8 wherein the metal surface
having the cross-linked layer thereon is brought
mechanically into another shape.
22. A process according to claim 8 wherein said metal surface
35 is cleaned prior to applying said layer of coating material
but does not have a primer or pretreatment layer applied to
the metal surface.

23. An object comprising a metal substrate having a surface and a layer of a cross-linked coating material according to claim 1 on said surface.
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24. An object according to claim 23 wherein said layer of cross-linked coating material is from 0.5 to 20 μm in thickness.
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25. An object according to claim 23 wherein said metal substrate is comprised of a material selected from the group consisting of ferrous materials, steel, alloyed steel, light metals, non-ferrous metals and precious metals.
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26. An object according to claim 23 additionally comprising a film comprising at least one polymer selected from the group consisting of polyethylene, polypropylene, and PET on said layer of cross-linked coating material.
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27. An object according to claim 23 wherein said metal substrate is a sheet or strip.
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28. A coating material having a viscosity of less than 300 mPas within a temperature range of 15 to 70°C and comprising:
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- a. 45 to 85 wt.% of at least one oligomeric substance having at least two unsaturated double bonds selected from the group consisting of epoxy (meth)acrylates, polyester (meth)acrylates, polyether (meth)acrylates, and polyurethane (meth)acrylates, wherein said oligomeric substance is linear or branched;
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- b. 10 to 60 wt.% of at least one (meth)acrylate selected from the group consisting of monofunctional, difunctional, trifunctional and polyfunctional (meth)acrylate compounds;

- c. 0.5 to 10 wt.% of at least one (meth)acrylate compound containing one or more phosphoric or carboxyl acidic functional groups;
 - d. 0.5 to 15 wt.% of at least one radical photoinitiator;
 - 5 and
 - e. up to 20 wt.% of at least one silane selected from the group consisting of dialkoxysilanes and trialkoxysilanes wherein said at least one silane contains at least one functional group other than
 - 10 alkoxy groups.
29. A process for coating a metal surface, said process comprising applying a layer of the coating material according to claim 28 to said metal surface and cross-
- 15 linking said layer by means of high-energy radiation.
30. An object comprising a metal substrate having a surface and a layer of a cross-linked coating material according to claim 28 on said surface.
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